ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Utilities Telecom Council and Winchester Cator, LLC	)	
	)	RM - _____
Petition for Rulemaking to Establish Rules Governing Critical Infrastructure Industry Fixed Service Operations in the 14.0–14.5 GHz Band	)	

PETITION FOR RULEMAKING

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SUMMARY

Members of the critical infrastructure industries (CII) are utilities and other companies that serve millions of customers in areas ranging from major American cities to rural communities and sparsely settled service territories. These utilities own, manage and operate critical communications systems and networks that enable the safe, reliable and efficient delivery of essential water, gas, electric and other energy services to the public at large. UTC is the international trade association for the telecommunications and information technology interests of electric, gas and water utilities, pipeline companies and other critical infrastructure industries (CII).

CII entities provide essential services to the public and play vital homeland security and emergency responder roles as hurricanes, ice storms, wildfires and other natural disasters pose additional challenges. CII entities' communications networks play an important role in ensuring reliable provision of basic services that are required for adequate quality of life, and are used in the aftermath of natural disasters or acts of terrorism to avoid interruptions to these critical services or ensure their prompt restoration. Utilities are experiencing a rapidly increasing need for, and reliance upon, spectrum-based services – and in particular, data capacity – to ensure the reliability of their services to the public. The need will continue to escalate over the next ten to fifteen years. It is

imperative that CII entities have robust communications networks in place to respond during the next hurricane, terrorist attack, or other disaster.

In order to meet the growing need for spectrum that can be accessed by the critical infrastructure industries, the Commission should commence a proceeding to establish rules that permit the following secondary terrestrial use of the 14.0–14.5 GHz FSS band.

- Fixed point-to-point and point-to-multipoint services for fixed and temporary fixed stations should be permitted in the 14.0–14.5 GHz band on a secondary basis. The proposed operations can operate without interfering with earth-to-space links and other incumbent services by following appropriate technical rules (discussed in greater detail below) and through ongoing frequency coordination and interference management techniques.

- The Commission should permit a single nationwide CII licensee to coordinate and manage all new FS services in the band. The single licensee would be responsible for ensuring that the proposed FS services do not interfere with incumbent operations in the band. The CII licensee would work with CII entities and facilitate their access to the spectrum.

- The 14 GHz CII licensee would perform all necessary on-going frequency coordination and other interference avoidance measures in consultation with an entity expert in satellite and fixed communications. In return, that entity would be permitted to use the CII spectrum on a preemptible basis for non-CII services (noncommercial and/or commercial).

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PETITION FOR RULEMAKING

The Utilities Telecom Council ("UTC") hereby requests that the Commission commence a proceeding to amend Parts 2 and 101 to permit shared, secondary terrestrial fixed service use of the 14.0–14.5 GHz band for critical infrastructure industry communications.[1]

UTC is the international trade association for the telecommunications and information technology interests of electric, gas and water utilities, pipeline companies and other critical infrastructure industries (CII).[2] UTC's members include large investor-owned utilities that serve millions of customers, to smaller

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[1] In making this proposal, UTC is joining with Winchester Cator LLC ("Winchester"), a company owned principally by industry pioneers Raj Singh and Jared Abbruzzese, who together are expert in the technology and business of satellite and terrestrial telecommuncations. UTC has relied on Winchester's technical expertise in creating a proposed solution in which maximum efficient use can be made of the 14.0–14.5 GHz band, while serving the unmet and acute needs of the CII sector.

[2] "Critical infrastructure industry" or CII is used as defined by the FCC in Section 90.7 of

(footnote cont'd on next page)

cooperative or municipal utilities that serve everything from major American cities to rural communities and sparsely settled service territories. Although these utilities differ in size and services, they all have one thing in common: they own, manage and operate critical communications systems and networks that enable the safe, reliable and efficient delivery of essential water, gas, electric and other energy services to the public at large.

These communications networks generally include licensed land mobile voice and data frequencies for field crews and business applications, and point-to-point and point-to-multipoint fixed wireless facilities used for vital control and monitoring of critical assets. Utilities are experiencing a rapidly increasing need for, and reliance upon, spectrum-based services – and in particular, data capacity – to ensure the reliability of their services to the public. The need will continue to escalate over the next ten to fifteen years.[3] Therefore, UTC considers this opportunity extremely important to permit its members to serve important public safety, emergency response and homeland security goals.

I. OVERVIEW OF PROPOSED CII OPERATIONS IN THE 14.0-14.5 GHZ BAND

In order to meet the growing need for spectrum that can be accessed by the critical infrastructure industries, the Commission should commence a proceeding to establish rules that permit the following secondary terrestrial use of the 14.0–14.5 GHz FSS band.

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its Rules, 47 C.F.R. § 90.7.

- Fixed point-to-point and point-to-multipoint services for fixed and temporary fixed stations should be permitted in the 14.0–14.5 GHz band on a secondary basis. The proposed operations can operate without interfering with earth-to-space links and other incumbent services by following appropriate technical rules (discussed in greater detail below) and through ongoing frequency coordination and interference management techniques.

- The Commission should permit a single nationwide CII licensee to coordinate and manage all new FS services in the band. The single licensee would be responsible for ensuring that the proposed FS services do not interfere with incumbent operations in the band. The CII licensee would work with CII entities and facilitate their access to the spectrum.

- The 14 GHz CII licensee would perform all necessary on-going frequency coordination and other interference avoidance measures in consultation with an entity expert in satellite and fixed communications. In return, that entity would be permitted to use the CII spectrum on a preemptible basis for non-CII services (noncommercial and/or commercial).

II. THE PROPOSED OPERATIONS WILL FURTHER IMPORTANT PUBLIC POLICY GOALS

A. The Proposed Operations Will Help Fulfill the Vital Spectrum Needs of the Critical Infrastructure Industries

The proposed CII operations will be used for point-to-point, point-to-multipoint and transportable fixed operations by CII users, including electric, gas, and water utilities — whether publicly, user- or government-owned — as well as the railroad and petroleum industries. Together, these industries provide essential services to the public and play vital homeland security and emergency responder roles as hurricanes, ice storms, wildfires and other natural disasters pose additional challenges. CII entities' communications networks play an important role in ensuring reliable provision of basic services that are required

[3] *See infra* Section II.A.1.

for adequate quality of life, and are used in the aftermath of natural disasters or acts of terrorism to avoid interruptions to these critical services or ensure their prompt restoration.

CII entities need spectrum both for more efficient day-to-day operations and for more reliable emergency response and prevention.[4] CII communications systems are designed, built and maintained to meet high reliability and performance standards; they are, in many ways, similar to public safety communications systems. Like public safety systems, CII radio communications are relied upon during times of emergency to coordinate relief and service restoration efforts. Such emergency response efforts typically involve coordination among thousands of crews from across the country as well as with personnel from state, local and federal agencies. CII communications systems are thus a vital part of the nation's homeland security infrastructure; because of this, they are designed to be more reliable than typical commercial wireless communications networks — a fact brought home when utility communications systems remained operational following Hurricane Katrina while commercial wireless systems did not.[5] It is imperative that CII entities have robust

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[4] *See* Comments of the Critical Infrastructure Communications Coalition, WT Docket No. 06-169, at 4 (Oct. 23, 2006) ("CICC Comments"); Joint Comments of the American Petroleum Institute and the Utilities Telecom Council, ET Docket No. 03-201, at 13-15 (Oct. 15, 2007) ("API/UTC Comments"); *Amendment of Part 101 of the Commission's Rules to Provide for Conditional Authorization on Additional Channels in the 23 GHz Band*, Petition for Rulemaking Filed by the Fixed Wireless Communications Coalition, RM-_____, at 2-3 (filed Nov. 7, 2007) ("FWCC Petition").

[5] *Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on*

(footnote cont'd on next page)

communications networks in place to respond during the next hurricane, terrorist attack, or other disaster. However, unlike traditional public safety agencies, and in spite of the importance of their services to the public, CII entities such as utilities currently have no spectrum dedicated for their use in the United States – not even on a non-interference secondary basis, as proposed here.

Under the instant proposal, CII users would have quick access to a high-capacity link during emergencies through the use of transportable transceivers providing one end of a microwave link from the site of the emergency. Pre-positioned base station antennas would be established by the CII entity, creating a communications "cloud" covering population areas as required. Such communications systems could be used as needed in emergencies. At the time of need, emergency response crews would set up small antennas and point them in the direction of the "cloud," thereby quickly establishing a high-capacity link capable of large data and video transmissions.

1. CII Spectrum Needs Are Growing Due to Massive Industry Change

The growth of CII communications networks is also important with respect to more reliable, efficient and effective operations at a time of acute energy needs. Electric utilities, under direction from both state and federal

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Communications Networks, Notice of Proposed Rulemaking, EB Docket No. 06-119, FCC 06-83, App. B, at 12-13 (rel. June 19, 2006) ("Electric utility networks (including utility-owned commercial wireless networks) appeared to have a high rate of survivability following Katrina.").

initiatives, are just beginning migration toward a so-called "smart grid."[6] The next generation of electric infrastructure will rely even more on large digital information technology networks providing two-way data streams between utilities and their customers (including home and commercial building networks and smart appliances), between utilities and their assets (generating plants, transmission lines, substations, transformers and other equipment), and even among utilities themselves on a regional basis.

This massive increase in data will necessitate far larger, and even more reliable, communications networks. A reliable, adaptive, self-healing, interconnected smart grid will help detect irregularities before a failure occurs and is one of the improvements meant to prevent other occurrences like the 2003 blackout in the northeastern United States and southeastern Canada. The smart grid also will enable more efficient energy consumption – an important outcome in a time of rising fuel prices and greater environmental consciousness about the need both to conserve energy and add power generation from renewable resources to the national grid.[7]

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[6] Rebecca Smith, *New Ways to Monitor Your Energy Use*, Wall St. J., June 19, 2007, at D1; Dave Turner, *Getting a Start on the Smart Grid: Why Smart Meters Are Critical*, Utility Automation & Engineering T&D, Sep. 1, 2007, at 14 ("Turner, *Smart Grid*"); R. Bryan Seal, *AMR to Smart Grid: Today's Technology is the Cornerstone for Tomorrow's Grid*, Utility Automation & Engineering T&D, Sep. 1, 2007, at 10 ("Seal, *AMR to Smart Grid*").

[7] Turner, *Smart Grid*, at 14. *See also*, Energy Independence and Security Act, Pub.L.No. 110-140, Title XIII ("Smart Grid"), §§ 1301 *et seq.* This title of EISA includes several mentions of utility communications network capabilities as critical to smart grid implementation and directs the Department of Energy to include them in its work toward smart grids.

As energy consumption grows and transmission capacity struggles to keep up — estimates say that energy consumption will grow 19 percent over the next ten years while transmission capacity will grow by only 6 percent[8] — additional communications network capacity will enable utilities to perform real-time analysis of distributed loads, remotely control distributed transmission and other devices, and automatically manage consumer demand.[9] By generating data regarding consumer energy usage and making such data available to both utilities and consumers, smart grids and their supporting networks can result in greater operational efficiency (by integrating customer care, outage management and other systems), more efficient demand-side management of energy consumption through time-of-use rates and other pricing programs, and increased consumer control over energy consumption.[10] While recent legislation toward smart grids is focused on electric utilities, gas and water providers also recognize the need for more and better data to manage demand and supply, while oil and gas providers and pipelines are enlarging their capacity rapidly to meet increasing public needs. These entities use the same kinds of internal communications networks on which electric utilities depend.

More reliable emergency response communications and smart grid networks, however, require spectrum on which to operate, and the reality is that

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[8] Seal, *AMR to Smart Grid*, at 10.
[9] Turner, *Smart Grid*, at 14.
[10] *Id.* at 14.

the CII industries need access to additional spectrum to ensure the reliability and continued growth of their communications systems. At present, CII entities use spectrum in several licensed and unlicensed bands, but these bands are plagued by congestion and interference and are insufficient to meet the growing spectrum needs – especially for high-speed data – of CII entities.[11] Given the spectrum needs described above, CII entities need access to dedicated, nationwide spectrum, particularly for point-to-multipoint use for broadband applications.[12]

2. CII Entities Are Included as "Public Safety Radio Service" Providers and, Therefore, Are Exempt from FCC Auction Requirements.

Based on Congressional intent and the FCC's own rules, CII entities should have access to spectrum without auction. The Commission's trend toward spectrum auctions and geographic area licenses has not served the CII industries' spectrum needs, and most utilities are prevented by statute or regulatory constraints from even attempting to participate.[13] Moreover, both

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[11] CICC Comments at 3; FWCC Petition at 3.

[12] API/UTC Comments at 13.

[13] *See id.*

> Over the years, the Commission has focused its resources on spectrum auctions and geographic area licenses, to the detriment of private industry. Geographic area licenses are generally centered around population centers directly correlated to the markets of commercial service providers. Such markets do not correlate in any meaningful way to the service areas that the energy industry and other private radio users seek to cover. As a result, an enterprise user not serving subscribers and using spectrum for internal applications only has little to no ability to compete for spectrum due to the manner by which market areas for auctioned spectrum is allocated.

For example, an oil and gas company has no realistic chance to acquire

(footnote cont'd on next page)

Congress and the Commission's own rules recognize CII entities' internal communications networks as "public safety radio services": quasi-public safety, internal systems not made commercially available that are vital to the health and safety of the public. Utilities, railroads and other CII entities are specifically exempted from having to obtain spectrum at auction.[14] This was made clear, not only in the legislative history of the amendments to the Balanced Budget Act of 1997, but also in the Commission's own interpretation of its auction authority:

> "[W]e conclude that the statutory exemption for public safety services applies not only to traditional public safety services . . ., but also to services designated for non-commercial use by entities such as utilities, railroads, transit systems, and others that provide essential services to the public at large and that need reliable internal communications in order to prevent or respond to disasters or crises affecting their service to the public. We also conclude that the public safety exemption applies only to services in which these public safety uses comprise the dominant use of the spectrum."[15].

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spectrum for communications at a Los Angeles based refinery by competing at auction against commercial service providers for the rights to the entire Los Angeles Economic Area license.

Id.; *see also id.* at 14 (noting that secondary markets do not meet CII entities' spectrum needs, because "[w]ithout a common Commission-supported spectrum clearinghouse, there are significant and nearly insurmountable search/transaction costs involved in identifying available spectrum, contacting willing lessors, and negotiating a spectrum lease.").

[14] 47 U.S.C. Section 309(j)(2); *see also,* 47 C.F.R. §1.2102(b).

[15] Implemention of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Report and Order and Further Notice of Proposed Rulemaking,* 15 FCC Rcd. 22709, 22740 (2000).

By permitting the proposed secondary operations in the 14.0–14.5 MHz band, the Commission would serve the public interest by beginning to address the urgent need for spectrum for CII use. Furthermore, by allocating this use to CII specifically for internal communications needs, as well as on a secondary basis, the Commission also averts any need to auction this spectrum.

B. The Proposed Operations Also Will Help Meet Non-CII Spectrum Needs.

While CII entities would constitute the dominant use of the band, the proposed operations would include non-CII fixed services operating on a preemptible basis with respect to CII services in the 14.0–14.5 GHz band by means of an open platform network. Such commercial wireless services would use point-to-point fixed service links, would be technically similar to the operations of CII entities, and could be used to facilitate communications by commercial entities during times of emergencies. Commercial operations would be conducted pursuant to a spectrum lease (see below).

III. WITH APPROPRIATE RULES, ONGOING FREQUENCY COORDINATION AND BAND MANAGEMENT, THE 14.0-14.5 GHZ BAND CAN BE SHARED BY INCUMBENT AND CII SERVICES WITHOUT HARMFUL INTERFERENCE

Over the years, the Commission increasingly has facilitated the shared use of spectrum for different services, including shared satellite and terrestrial services.[16] This practice, largely enabled by advances in digital transmission

[16] *See, e.g., Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band*
(footnote cont'd on next page)

technology, allows more efficient use of spectrum, permitting the Commission to "harvest" spectrum for new services while protecting incumbent, primary services. As demonstrated by the attached Report prepared by RKF Engineering, LLC ("RKF Report"), and as discussed further below, the 14.0–14.5 GHz frequency band can be shared by the incumbent and proposed services without harmful interference.[17]

At the same time, the RKF Report cautions that ongoing frequency coordination and management of the use of the spectrum by new CII services, especially with regard to temporary fixed services, will be required to avoid such harmful interference both with respect to protecting existing services and to ensure that new CII services can mitigate against potential interference to their own operations.

A. Existing Services in the 14.0-14.5 GHz Band

The 14.0–14.5 GHz band is occupied predominantly by earth-to-space Fixed Satellite Service ("FSS") licensees, which are primary and which occupy

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Frequency Range; Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates; ET Docket No. 98-206, RM-9147, FCC 02-116, at 3-4 (rel. May 23, 2002) (permitting sharing of 12.2–12.7 GHz band by satellite (DBS) and terrestrial (MVDDS) services); *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands,* IB Docket Nos. 01-185, 02-364, FCC 03-15, at 3 (rel. Feb. 10, 2003) (permitting MSS licensees to integrate ancillary terrestrial components into their MSS networks).

[17] It should be noted that in Regions 1 and 3, the 14.3–14.5 GHz band is allocated on a co-primary basis to FS, FSS uplinks and Mobile (except aeronautical mobile services). This co-primary allocation indicates that permitting FS on a secondary – rather than co-primary – basis in the 14.0–14.5 GHz band is feasible.

the entire band.[18] These licenses are for satellite uplinks and have been assigned to VSAT, NGSO, ESVs (Earth Stations on Vessels) and other conventional GSO earth-to-space uses. The band also includes secondary services such as radio-navigation ("RN"), mobile satellite services ("MSS") and space research services ("SRS"). Several federal users also operate in the band, including Tracking and Data Relay Satellite Services and radio astronomy service ("RAS") stations. The 14.2–14.4 GHz band also may include some legacy Fixed Service ("FS") local television transmission service ("LTTS") operations under grandfathered licenses that will not be renewed upon expiration. All indications are that such LTTS stations, whose licenses also permit operations in other bands, may have already been removed from the 14.2-14.4 GHz band.[19]

As discussed below and in the RKF Report, these services can be protected from interference from the proposed CII services.

B. Operating Requirements, Frequency Coordination, and Band Management Will Enable Sharing of the 14.0–14.5 GHz Band Without Harmful Interference.

The proposed sharing of the 14.0–14.5 GHz band requires that the CII service not cause harmful interference to primary and existing secondary

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[18] An analysis of services operating in the band is set forth in *Amendment of Parts 2 and 25 of the Commission's Rules to Allocate Spectrum and Adopt Service Rules and Procedures to Govern the use of Vehicle-Mounted Earth Stations in the Certain Frequency Bands Allocated to the Fixed-Satellite Service*, Notice of Proposed Rulemaking, IB Docket No. 07-101, FCC 07-86, at 16-20, ¶¶ 29 - 38 (rel. May 15, 2007) ("VMES NPRM").

[19] See *Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and 14.0-14.5 GHz/11.7-12.2 GHz Bands*, Report and Order, 20 FCC Rcd 674, 713 (2005); VMES NPRM At 19, ¶ 35.

licensees, as well as existing and new federal operations in the band, and that the proposed CII operations will be able to operate efficiently without suffering harmful interference from existing services or causing such interference to each other. As the RKF Report demonstrates in detail, all of these requirements can be met with appropriate service rules and ongoing frequency coordination and band management of the use of the spectrum by new CII services.

The proposed CII service in the 14.0–14.5 GHz band would include point-to-point ("P2P") stations and point-to-multipoint ("P2M") stations, with fixed and temporary fixed terminals ("TFTs"). Based upon extensive analysis, as presented in the RKF Report, the following requirements are recommended for both P2P and P2M stations so as to avoid interference with satellite uplink services operation in the band:

1. The stations shall off-point at least 5 degrees away from the satellite geostationary arc.
2. Antenna diameters shall be 45 cm or greater.
3. Power control shall be required on all links in order to minimize excess margin.
4. The maximum EIRP shall be 28 dBW/MHz per station.

The following additional requirements would only apply to P2M stations:

5. The fixed base station shall have a minimum antenna gain of 17 dBi and offpoint at least 5 degrees from the GEO arc.
6. The maximum transmit power of a base station shall be 11 dBW/MHz.

As noted in the RKF Report, the 5 degrees off-pointing that is recommended is more than the ITU 1.5 degree off-pointing requirement in order

to facilitate smaller terminals and to allow additional margin to protect satellite operations in the band.[20] In addition, antenna size restrictions, power limitations, and power control are required so that harmful interference is avoided even under multiple worst case assumptions.

The RKF Report also addresses the special issues associated with ensuring that TFT's do not cause harmful interference to satellite uplink services.[21] As discussed above, TFTs are vital to the CII industry and are a central element of the proposed CII service. At the same time, the greater interference risk due to potential mispointing (relative to non-transportable stations that are at a known position and transmit to a known tower/receiver) must also be recognized. Different methods for protecting against such mispointing are set forth in the RKF Report with the responsibility left squarely on a single CII coordinating body (the "CII Coordinator") for ensuring that appropriate means are put in place to protect against possible mispointing. If problems were to arise and thought to emanate from TFT's , the CII Coordinator also would serve as a central point of contact to address such matters immediately.

With respect to the incumbent federal services and legacy LTTS licensees, if still extant,[22] coordination will be required with the appropriate government agency or individual licensee in order to protect existing and, in the case of

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[20] RKF Report, § 2.
[21] RKF Report, § 3.2 *et seq.*
[22] The grandfathered LTTS licensees will vacate the band once their license terms expire.

federal use, potentially future operations. Such coordination will be facilitated and streamlined by ensuring that a single party is responsible for all coordination efforts nationwide. This will be particularly important as to new federal systems that may come on line. Practically, having a single coordinating body for the federal government to look to in such circumstances is essential to the shared use of the band that is proposed.

As the RKF Study makes clear, protecting the proposed CII operations from FSS transmitters (particularly VSAT terminals) will be more challenging than the protection of FSS operations described above. Transmissions from VSAT terminals are narrowband and intermittent, but pose relatively high interference risk because of their power level and the fact that they may be located within the main beam in line of site of the CII microwave receiver. In addition, the Commission has permitted mobile VSAT terminals in the band as a secondary basis,[23] and is considering a broader petition seeking Primary status for such terminals.[24] Such terminals, to the extent permitted, will be relatively unpredictable interference sources and will require the proposed CII terminals to adapt quickly to a dynamically changing interference environment.

Nevertheless, interference to the proposed CII services can be mitigated by a variety of means. The primary means of addressing potential interference from VSAT terminals is to take advantage of the fact that VSAT transmissions are

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[23] See *Raysat Antenna Systems, LLC*, DA 08-401 (rel. Feb. 15, 2008).

narrowband while the proposed CII operations would have a much broader bandwidth presence. Spread spectrum techniques[25] can thereby be used to mitigate the effects of narrowband interference from VSAT terminals. As the RKF Report discusses in greater detail, Orthogonal Frequency Division Modulation ("OFDM") can be used by CII terminals to overcome the effects of interference from VSAT terminals.[26]

The RKF Report describes additional measures that can be used to avoid interference and increase reliability of the proposed CII operations, including error correction coding, active interference mitigation, automatic power control, automatic repeat queuing, antenna nulling, and low noise amplifier overload mitigation.[27] Because the proposed CII operations would be secondary, the Commission need not adopt detailed rules to protect such operations from existing interference. Rather, the Commission can give CII users, working with the CII Coordinator, the flexibility to use whatever interference mitigation techniques would be most effective for the given application.

Potential interference between and among new CII systems is also an issue that must be addressed. To address this concern, in addition to traditional approaches to frequency coordination, a channelization plan, based upon time

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[24] See VMES NPRM.
[25] In using the term "spread spectrum" refers to any technology such as CDMA, OFDMA, etc. that spreads a signal over a wide bandwidth, and is not intended to limit prospective use to any particular technology.
[26] RKF Report, § 4(a).
[27] RKF Report, § 4(b).

division duplex (TDD) operation, that will enable CII users to employ smart antenna technologies such as beamforming and nulling, to reduce system interference. The CII Coordinator would also be responsible for establishing and maintaining a centralized clock for frame synchronization by individual CII stations.

IV. TO ENSURE THE PROPOSED FIXED SERVICES DO NOT INTERFERE WITH PRIMARY EARTH-TO-SPACE LINKS, THE COMMISSION SHOULD ESTABLISH A NATIONWIDE CII LICENSEE FOR THE 14.0-14.5 GHZ BAND

In light of the proposed sharing of the band with incumbent satellite and other services and the need to establish clear responsibility for interference avoidance, the Commission should establish a single, nationwide CII licensee in the 14.0–14.5 GHz band. This licensee will work with the CII Coordinator and be responsible for ensuring that the proposed CII operations, including the TFTs, do not interfere with the earth-to-space links that are primary in this band. The national CII licensee will also serve as a single contact point for existing users of the band with respect to frequency coordination and any interference issues that may arise. Moreover, in order to perfect its spectrum coordination role in a predominantly satellite primary use environment, the national CII licensee should be permitted to enter a spectrum lease with a private party experienced in satellite and terrestrial communications and to

permit that party preemptible use of the 14.0–14.5 GHz band for non-CII services (noncommercial and/or commercial).[28]

A. A Single Nationwide CII Licensee Will Help Ensure That the Proposed Fixed Service Operations Will Not Interfere With Incumbent Services in the Band.

As explained above, while the proposed CII operations can coexist without causing interference to incumbent earth-to-space links, there may be instances – such as with transportable terminals or near certain federal government operations – in which careful coordination may be necessary to prevent interference. Frequency coordination may also be necessary in instances where proposed CII operations are close to each other.

The Commission should establish a single, nationwide CII licensee that will be responsible for all required frequency coordination and any other measures designed to avoid interference to incumbent users of the band. The licensee will also serve as a single contact for any interference-related issues, thereby significantly reducing any transaction costs associated with addressing instances of interference to primary users of the band. Because it would be responsible for all operations in the band, the CII licensee would be required to locate any terminals causing interference to primary users of the band and take necessary steps to mitigate the harm.

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[28] In this context, "preemptible" means that CII users would be able to preempt non-CII use of the 14.0–14.5 band.

In addition to providing a single contact for interference-related issues, a single nationwide licensee would also serve as a single contact for access to spectrum, thereby reducing transaction costs associated with frequency coordination, utilizing spectrum in different locations, etc. As the Commission noted when it adopted a nationwide public safety licensee in the 700 MHz band:

> Traditional site-by-site licensing is designed primarily to license dispatch radio systems on a transmitter-by-transmitter basis in local areas, yet is very cumbersome for radio systems comprising hundreds or thousands of sites. On the other hand, creating a single nationwide geographic area license offers greater flexibility and eases the administrative burden on both the public safety community and the Commission.[29]

The same considerations should guide the Commission to establish a single, nationwide licensee for CII operations in the 14.0–14.5 GHz band.

B. The Nationwide CII Licensee Should Be Permitted to Enter Into a Spectrum Lease to Allow Preemptible Non-CII Use the Band

The nationwide CII licensee should be permitted to enter into a spectrum leasing arrangement that would allow non-CII use of the 14.0–14.5 GHz band on a preemptible basis. Such an arrangement will ensure that the use of the 14.0–14.5 GHz band is fully available to meet the critical needs of the CII users, while ensuring that the spectrum is used efficiently.

As discussed above, the national CII licensee should be an entity with experience working with critical infrastructure industry service providers and familiar with the needs of CII users. Moreover, the national CII licensee will also

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[29] *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report and Order,
(footnote cont'd on next page)

be responsible for ensuring that CII operations do not cause interference to the primary satellite services in the 14 GHz band. Such frequency management involves knowledge of the MSS and FSS communities and their operations, which typically are outside the core expertise of CII entities. Rather than require the national CII licensee to be familiar with the operations of both the CII and satellite industries, the Commission should allow the proposed 14 GHz CII licensee to enter into an agreement with a private entity to manage the relationship with the satellite industry and prevent interference to incumbent primary users of the 14 GHz band.[30] Such an entity would be permitted to use the 14.0–14.5 GHz band on a secondary, pre-emptible basis for non-CII operations. By requiring that non-CII services such as backhaul be preemptible, the Commission can ensure that the 14 GHz band remains fully available to meet the needs of the CII users.

C. The Proposed Operations Make the 14.0–14.5 GHz Band Exempt From Section 309's Competitive Bidding Requirement

Under Section 309(j)(2) of the Communications Act, "public safety radio services, including private internal radio services used by State and local government and non-governmental entities . . . that (i) are used to protect the safety of life, health, or property; and (ii) are not made commercially available to the public" are exempt from the Act's competitive bidding requirements. The

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WT Docket No. 06-150, FCC 07-132, at 143, ¶ 369 (rel. Aug. 10, 2007) ("*700 MHz Order*").

[30] Such an entity would be required to work with both the satellite industry, *i.e.*, the incumbent FSS and MSS users of the 14 GHz band, and the CI Coordinator and should (footnote cont'd on next page)

Commission has analyzed the scope of this exemption and concluded that it applies to CII entities such as utilities, railroads and pipelines.[31] The Commission has also made it clear that the exemption from the competitive bidding requirements applies when the dominant use of the band is for exempted public safety services, such as those proposed by CII entities in this band.[32] UTC does not propose that any commercial communications service be offered by its eligibles in this frequency band, and in fact, would be willing to see a prohibition against subscriber-based services being offered by CII entities operating in this spectrum, should the Commission consider this necessary.

The use of the 14.0–14.5 GHz band for pre-emptible non-CII services does not change the fact that the proposed operations in the band are not subject to competitive bidding. Commercial operations on a secondary, pre-emptible basis do not undermine the principal purpose of the exempt spectrum for public safety use, and in fact further the goals of maximizing efficient use of the spectrum. The national CII licensee would retain control over the 14.0–14.5 GHz band and would assure that the spectrum is used in a manner that complies with the applicable regulatory and statutory requirements.

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be familiar with all industries' communications practices. *See supra* note 1.

[31] *Competitive Bidding Order* at 37-39, ¶¶ 75-78; *see also* H.R. Conf. Rep. No. 105-217, 105th Cong., 1st Sess., at 572 (1997) (Conference Report for the Balanced Budget Act of 1997, stating that Section 309(j)(2)'s exemption applies to the private internal radio services used by "utilities, railroads, metropolitan transit systems, pipelines, private ambulances, and volunteer fire departments.").

[32] *Competitive Bidding Order* at 33, ¶ 66 ("[W]e find that the exemption should be evaluated in terms of its application to particular services rather than to particular

(footnote cont'd on next page)